AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of solvent pulping cellulose-containing biomass comprising substantially continuously and sequentially:

a) gradually stepping up the pressure and temperature of particulate, crushed or shredded biomass from substantially atmospheric and ambient to above about 350 psig and above kraft cooking temperature, in a plurality of different stages of increasing pressure and temperature;

b) delignifying the particulate biomass in an aqueous slurry of solvent at a pressure above about 350 psig and a temperature above kraft cooking temperature;

c) simultaneously removing solvent while continuing delignification of the biomass in the slurry, at a pressure above about 350 psig and at a temperature above about 140 deg. C, preferably above about 180 deg. C;

d) substantially instantaneously greatly reducing the pressure of the slurry; and then

e) washing the slurry.

2. (Original) A method as recited in claim 1 wherein d) produces flashed solvent, and further comprising f) condensing and reusing the flashed solvent.

3. (Currently Amended) A method as recited in ~~any preceding~~ claim 1 wherein c) is practiced in at least one pressure diffuser, which is arranged in series when there are more than one pressure diffuser.

4. (Currently Amended) A method as recited in ~~any preceding~~ claim 1 further comprising

g) providing blow-back protection, upon upset conditions, in the process prior to or intermediate within a).

5. (Original) A method as recited in claim 4 wherein g) is practiced by providing a valve capable of withstanding the highest pressure encountered during the practice of a)-e).

6. (Original) A method as recited in claim 5 wherein g) is practiced at a location wherein the pressure on one operative side of the valve is at substantially atmospheric pressure.

7. (Currently Amended) A method as recited in ~~any preceding~~ claim 1 wherein b) and c) are practiced at a temperature between about 180-210 degrees C, and a pressure of between about 350-500 psig.

8. (Original) A method as recited in claim 1 wherein the solvent comprises ethanol as the primary active constituent.

9. (Original) A method as recited in claim 1 wherein c) is practiced to substantially preclude re-deposition of lignin on the cellulose of the biomass.

10. (Original) A method as recited in claim 1 wherein solvent-containing liquor used in b) and c) includes liquor removed from the slurry in a subsequent stage, the removed liquor maintained under substantially the same pressure as in the practice of b) and c).

11. (Original) A method as recited in claim 1 wherein the biomass comprises corn stovers.

12. (Original) A solvent pulping system for a cellulose containing biomass, comprising:

a) at least one steaming vessel having a first outlet;

b) at least one impregnation vessel operatively connected to the first outlet, and having a second outlet;

c) a blow-back preventing, upon upset conditions, device;

d) a solvent delignification reactor operatively connected to b) and capable of operating at a pressure of 350 psig or more; and

wherein c) is capable of withstanding the operating pressure of d).

13. (Original) A system as recited in claim 12 wherein d) has a third outlet, and further comprising at least one pressure diffuser operatively connected to the third outlet.

14. (Original) A system as recited in claim 12 further comprising an indirect heater for heating solvent supplied to b).

15. (Original) A system as recited in claim 12 further comprising a blow tank operatively connected to the last of the pressure diffusers

16. (Original) A system as recited in claim 15 further comprising a relief condenser operatively connected to a gaseous relief from the blow tank.

17. (Original) A system as recited in claim 12 wherein d) comprises an upflow or vapor phase reactor.

18. (Original) A system as recited in claim 12 wherein b) includes a plug screw feeder or compression screw device.

19. (Original) A system as recited in claim 12 wherein the system comprises a plurality of vessels which incrementally raise the pressure of the biomass.

20. (Original) A system as recited in claim 12 further comprising a plurality of filtrate tanks maintained at substantially the same operating pressure as d).

21. (Original) A system as recited in claim 12 and substantially devoid of a filtrate tank.

22. (Original) A system as recited in claim 12 further comprising a nitrogen purge for d).

23. (Original) A system as recited in claim 12 further comprising a nitrogen pressure control device.

24. (Original) A system as recited in claim 12 further comprising an extraction screen adjacent the third outlet.

25. (Original) A system as recited in claim 12 wherein c) comprises a rotary valve capable of withstanding a pressure differential of between about 350-500 psig.

26. (Original) A system as recited in claim 25 wherein c) is capable of withstanding a pressure differential of about 450 psig.

27. (Original) A solvent pulping system for a cellulose containing biomass, comprising:

a) at least one steaming vessel having a first outlet;

b) at least one super-atmospheric impregnation vessel operatively connected to the first outlet, and having a second outlet;

c) a solvent delignification reactor operatively connected to b) and capable of operating at a pressure of 350 psig or more, and having a third outlet; and

d) a plurality of series connected pressure diffusers operatively connected to the third outlet and operating at 350 psig or more, and optionally a retention tube downstream of

each pressure diffuser to provide sufficient retention time to substantially preclude re-deposition of lignin on the cellulose fibers of the biomass.

28. (Original) A system as recited in claim 27 further comprising a plug screw feeder or compression screw device between a) and b); and further comprising a solvent containing line for introducing solvent-containing liquor at the plug screw feeder outlet or compression screw device outlet.

29. (Original) A system as recited in claim 27 further comprising an indirect heater for heating solvent supplied to b), a blow tank operatively connected to the last of pressure diffusers, and a relief condenser operatively connected to a gaseous relief from the blow tank.

30. (Original) A system as recited in claim 27 wherein c) comprises an upflow or vapor phase reactor, and wherein b) includes a plug screw feeder; and further comprising at least one super-atmospheric steaming vessel operatively connected between a) and b).

31. (Original) A system as recited in claim 27 further comprising a plurality of filtrate tanks maintained at substantially the same operating pressure as c).

32. (Original) A solvent pulping system for a cellulose containing biomass, comprising:

a) at least one steaming vessel having a first outlet;

b) at least one super-atmospheric impregnation vessel operatively connected to the first outlet, and having a second outlet;

c) a solvent delignification reactor operatively connected to b) and capable of operating at a pressure of 350 psig or more, and having a third outlet; and

wherein b) includes a plug screw feeder and a fluffer at its outlet; and further comprising a solvent containing line for introducing solvent-containing liquor at the plug screw feeder outlet or between the plug screw feeder and fluffer, or in the fluffer.

33. (Original) A solvent pulping system for a cellulose containing biomass, comprising:

a) at least one super-atmospheric steaming vessel having a first outlet;

b) at least one super-atmospheric impregnation vessel operatively connected to the first outlet, and having a second outlet;

c) a solvent delignification reactor operatively connected to b) and capable of operating at a pressure of 350 psig or more, and having a third outlet; and

d) a plug screw feeder or compression screw device between a) and b); and

e) a solvent containing line for introducing solvent-containing liquor at the plug screw feeder outlet or compression screw device outlet.

34. (Original) A system as recited in claim 33 further comprising at least one series connected pressure diffuser operatively connected to the third outlet and operating at 350 psig or more, and optionally a retention tube downstream of each pressure diffuser to provide sufficient retention time to substantially preclude re-deposition of lignin on the cellulose fibers of the biomass.

35. (Original) A system as recited in claim 34 further comprising a blow tank operatively connected to the last of pressure diffusers and retention tubes.

36. (Original) A system as recited in claim 34 further comprising vessels for multistage alcohol washing located downstream from the last of pressure diffusers and retention tubes.

37. (Original) A system as recited in claim 33 further comprising an indirect heater for heating solvent supplied to b).

38. (Original) A system as recited in claim 33 wherein c) is a downflow reactor.

39. (Original) A system as recited in claim 33 further comprising a plug screw feeder or compression screw device in advance of a).

40. (Original) A system as recited in claim 33 further comprising a blow-back preventing, upon upset conditions, device that is capable of withstanding the operating pressure of c) and is located in advance of a).

41. (Original) A method of solvent pulping cellulose-containing biomass comprising substantially continuously and sequentially:

a) steaming the biomass and impregnating it with solvent to produce an aqueous slurry of biomass and solvent;

b) delignifying the particulate biomass in the slurry at a pressure above about 350 psig and a temperature above about 140 degrees C, preferably above about 180 degrees C;

c) simultaneously removing solvent while continuing delignification of the biomass in the slurry, at a pressure above about 350 psig and a temperature above about 180 degrees C in a series of stages, and to substantially preclude re-deposition of lignin on the cellulose of the biomass;

d) substantially instantaneously greatly reducing the pressure of the slurry; and then

e) washing the slurry.

42. (Original) A method as recited in claim 41 wherein during b), c) and e) filtrate is removed and held in tanks and then redirected to a stage other than that from which it was

removed, and further comprising maintaining the filtrate tanks and connected piping at substantially the same pressure as b) is practiced.

43. (Original) A method as recited in claim 41 wherein d) produces flashed solvent, and further comprising f) condensing and reusing the flashed solvent; and further comprising g) providing blow-back protection, upon upset conditions, in the process prior to or intermediate within a), by providing a rotary valve capable of withstanding the highest pressure encountered during the practice of a)-e), and wherein g) is practiced at a location wherein the pressure on one operative side of the rotary vale is at substantially atmospheric pressure.

44. (Original) A method as recited in claim 41 further comprising indirectly heating the solvent supplied for impregnating the biomass in a) to a temperature above about 180 degrees C.

45. (Original) A method as recited in claim 41 further comprising retaining the slurry after at least one pressure diffuser stage for a time sufficient to substantially prevent re-deposition of lignin on the cellulose fibers of the biomass.

46. (Original) A method as recited in claim 41 wherein the liquor to material ratio during delignification is between about 5:1 and 9:1.